

Strategies and Approaches towards Universal Iodisation of Salt: Knowledge, Attitude and Practice in Selected States in India

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ABSTRACT

An Evaluation of National Iodine Disorder Deficiency Control Programme (NIDDCP) in India was undertaken by National Institute of Health & Family Welfare on the behest of Ministry of Health & Family Welfare in the year 2005-06 in ten States of the country selected from North, East, South, West and Central Regions. The objective of evaluation was to find out the implementation status and level of awareness about use of iodised salt by the community. The data was collected using semi-structured interview schedules from officials and structured schedule from households regarding knowledge, attitude and behaviour about consumption of salt. Salt samples from 2404 households, both from urban and rural areas, were tested on the spot using MBI kits. The programme implementation status varied among states. It was found that more than 72 per cent respondents were aware about the iodised salt. Regarding ban on sale of uniodised salt, only 10 per cent respondents were aware. Except Giotre, other ill-effects of IDD were hardly known to the community. Major source of information about this awareness was television. Iodised salt was easily available at a distance of less than a km. It was found that consumption of non-iodised salt was common in salt producing States because small producers were usually selling non-iodised salt in rural areas at cheaper rate as there was no check on transportation of salt through road. In rural areas salt was also being used for cattle consumption, bricks preparation, coconut trees, ice-cream preparation and burial purposes. Though the programme has been successful in ensuring the reach of iodised salt in remote areas but people still found the price of iodised salt unaffordable. The average rate to which people may like to purchase iodised salt was between rupees 2 to 3/- per kg.

The study came out with suggestions to strengthen the programme at district level and below in terms of awareness generation through IEC, testing of iodine content in urine and salt, monitoring and evaluation, public private partnership initiatives in different components of the programme. Findings are still relevant as no further national evaluation is done after this study and situation in the field remained unchanged due to low importance of the programme.

Key words: Knowledge, Iodine, Disorders, Deficiency, Iodized salt

INTRODUCTION

Iodine is an essential micronutrient with an average requirement of at 100-150 micrograms daily for normal human growth and development. The disorders caused due to deficiency of nutritional iodine in the food are called Iodine Deficiency Disorders (IDDs). These disorders include abortion, stillbirth, mental retardation, deaf-mutism, dwarfism, squint, cretinism, and goiter of all ages, neuro-motor defects etc [1].

Iodine Deficiency Disorders (IDDs) pose a serious threat to the health, economic productivity and advancement of several hundred million people throughout the world. Iodine deficient children suffer from tardy concentration, impaired co-ordination and sluggishness, which result in poor school performance. The Ministry of Health & Family Welfare and the United Nations Children's Fund (UNICEF) estimated that around 26 million children born each year, of whom 13 million (nearly 50%) face the risk of IDDs [2]. Iodine deficiency is known to cause other health problems viz. stunting of growth, speech and hearing impediments and depleted levels of energy in children. Studies conducted all over the world revealed that 130 countries are affected by iodine deficiency, with a total population in excess of 2 billion at risk of brain damage [3]. Therefore, the elimination of IDDs is a critical national development issue and has been given priority by government and international agencies.

Recognizing the importance of preventing IDDs, the World Health Assembly in 1990 adopted the goal of the elimination of iodine deficiency as a public health problem by the year 2000 [4]. Salt iodisation was identified as the main intervention to deliver iodine on a continuous and self-sustaining basis to populations around the world [5].

India is the second most populous country in the world with a population of 1027 million [6]. There is a high prevalence of goiter and cretinism in the Himalayan belt from Jammu and Kashmir in the West to Arunachal Pradesh in the East and along this entire length extending at least 500 kms south of the Himalayas into the flat sub-Himalayan Terai (plains). In addition to the well-known Himalayan endemic belt, iodine deficiency and endemic goiter has been reported from many other States in the country. In our country, it is estimated that more than 71 million persons are suffering from goiter and other iodine deficiency disorders [7].

National Family Health Survey III [8] showed that in urban areas 71.5 percent of the population consumed adequately iodised salt while in rural areas only 41.2 percent used adequately iodised salt. A total of 51.1 per cent of households were using adequately iodised salt. The data also shows that in coastal states like Tamil Nadu (41.3%), Karnataka (43.3%), Andhra Pradesh (31.0%), Kerala (73.9%) and Gujarat (55.7%),

the percentage of household consuming adequate iodised salt was much lower than many of the northern states like Delhi (86%), Punjab (74.6%) and Himachal Pradesh (82.5%). Only 41.2% of the households in rural areas were using iodised salt where as usage level was higher in large cities (76.7%), small city and town (66.5%). The survey underlines need for monitoring and surveillance in all the states.

National IDD Control Programme in India

Realizing the magnitude of the problem, the Government of India launched a 100 per cent centrally assisted National Goitre Control Programme (NGCP) in 1962. Evaluation of NGCP by the Nutrition Foundation of India in the year 1981 revealed that the programme could not achieve the desired objectives. The Central Goitre Control Review Committee (CGCRC) has recommended universalizing iodisation of edible salt for human consumption in the country. Accepting the recommendations of CGCRC, Government of India in 1984 took a historic policy decision for Universal Salt Iodisation (USI) i.e. to fortify all edible salt in the country with iodine. The elimination of goitre was included in the Prime Minister's 20 Point Programme. The PFA Act in 1988 was amended to specify that iodised salt should have, on the minimum, iodine in the concentration of 30 ppm at production level and 15 ppm at consumer level.

In August 1992, the National Goitre Control Programme (NGCP) was renamed as National Iodine Deficiency Disorders Control Programme (NIDDCP) with a view to cover a wide spectrum of Iodine Deficiency Disorders like mental and physical retardation, deaf-mutism, cretinism, stillbirth, abortion etc. with the goal of reducing the prevalence of IDD below 10 percent in endemic districts of the country [9].

Production of Iodised Salt

The iodised salt production in India has been liberalized to private sector. In 1983 there were only 12 iodisation plants in the country producing 0.2 million tones of iodized salt, dramatic changes occurred in less than ten years after the liberalization. Policy initiatives taken by the Govt. over the last one decade have helped moving closer towards the goal of universal salt iodisation (USI). The Salt commissioner's office facilitated establishment of 813 Units including 42 refineries with a total annual installed capacity of 117 lakh tones (as on 31-06-2006) which is more than 54 lakh tones required for entire human consumption in the country per annum. These units have annual production capacity of 124.30 lakh tones of iodated salt. The production of iodised salt, which was 36.89 lakh tons during 2002-03, has increased to 42.53 lakh tons during the year 2003-04, against the target of 52.0 lakh tons. It is increased to 46.10 lakh tones by the end of 2004-05 (table 1). In the year 2005-06 the production was 49.83 lakh tons. This is expected to rise further in near future [10].

Various studies related to Iodine Deficiency Disorders have been conducted in the country during the last number of years and almost all of them have demonstrated the decline of goiter in the country and suggested the need of strengthening the system of monitoring of quality of iodised salt made available to population, strengthening IEC (Information, Education, Communication) component for elimination of IDD and increasing the coverage of adequately iodised salt. However, none of the studies have focused on comprehensive evaluation of NIDDCP.

The NIDDCP has now been under implementation for more than four decades and had undergone several changes. Therefore, the Nutrition Cell, Directorate General of Health Services, MOHFW, desired that the programme may be evaluated as a whole to see how far the programme has been able achieve its objectives. The present study on Evaluation of National Iodine Deficiency Disorders was assigned to National Institute of Health & Family Welfare and funded by Ministry of Health & Family Welfare (MOHFW) in the March 2005.

MATERIALS AND METHODS

The present evaluation was conducted to evaluate the policy and managerial process regarding implementation of National Iodine Deficiency Disorders Control Programme (NIDDCP) in the country with respect to assess the awareness. For the present evaluation ten States from five regions of the country viz., Assam, Punjab, Himachal Pradesh, Gujarat, Uttar Pradesh, Orissa, Sikkim, Tamil Nadu, Kerala and Rajasthan were selected. Keeping in view the prevalence of IDD and implementation status of NIDDCP, a multistage random sampling design was adopted for the study. At the first stage, the country was stratified into five major regions i.e. East, West, North, South and Northeast. Next to this, from each region, two States were selected based on the prevalence rates of Iodine Deficiency Disorders (i.e. one with higher and the other with lower). At the third stage, from each selected State, two districts (one higher endemic and the other lower) were selected. Further, one Block PHC/CHC was selected randomly from each district. Thereafter, from each selected Block PHC/CHC, two Sub-centers and two villages (one headquarter and another non-headquarter village from each selected Sub-centers) were randomly selected for the study. From each village, 20 households were randomly selected.

For the urban areas, from the selected district, one UFWC/Health Post was selected. From the selected center two urban blocks- one adjacent to District UFWC/Health Post and another away from it were randomly selected and from each ward, 20 households were selected randomly. Salt samples collected from Households were tested by MBI kits on the spot and findings were demonstrated to HHs. In all, a total of 10

States, 20 Districts, 20 CHCs/Block-PHCs, 40 Sub-centers, 80 villages and 1600 households were selected from the rural areas. On a similar pattern from urban areas, 20 UFWCs/Health Posts, 40 urban blocks, and 800 households were selected. Thus, a total of 2400 Households, 240 retailers and 82 wholesalers were included in the study.

The data for the study was collected by using the interview technique and record study. The data was analysed manually and also through computer using SPSS Software. Schedules filled from household were scrutinized, edited and then data were directly entered into SPSS and analysed as per objectives of the study.

RESULTS

(A) Strategies and Approaches in Programme:-

State IDD Control Cell Level

The IDD Control Cells were functioning in all States except few like Himachal Pradesh. In most of the States the cells are located in the Directorate of Health Services. The cells are being looked after as an additional responsibility by the State Programme Officers designated as Nodal Officers. The positions of Technical Officer, Statistical Assistant, Lab Assistant and LDC in most of the States are lying vacant due to certain administrative reasons.

IEC Activities

It was found that on Global IDD day, some awareness raising activities relating to importance of iodised salt were undertaken in almost all the States. There was shortage of IEC material in all states..

Survey-Re-survey

Goitre surveys/ resurveys were not being conducted regularly in all the States due to shortage funds, lack of detailed guidelines and poor coordination with concerned medical college.

Funds Status

The States like Rajasthan, Assam, Gujarat, Orissa, Sikkim and Kerala were regularly utilising the grants received from the Government of India during the period 2002 -2005. However, in States like UP, Punjab, Himachal Pradesh and Tamil Nadu the funds were not utilised regularly due to vacant positions, delay in releasing grants by State Government and non-conduction of goitre surveys.

State IDD Laboratory

The IDD lab in most of the States were not functioning except in Gujarat, Rajasthan, Kerala, UP and Sikkim due to vacant positions and insufficient reagents and equipments.

UNICEF Support

UNICEF Office was supplying of MBI kits for salt testing, IEC material for awareness generation and

conduction of workshops.. UNICEF planned to provide Mobile Lab in the State of Gujarat.

PFA Lab

The PFA Laboratory in each State was reportedly analysing salt samples collected from retailers and wholesalers. The coordination between PFA Laboratory with State IDD Cell was lacking.

Programme Management at District Level

The Chief Medical and Health Officer in districts were made responsible for implementation of programme at district level and below. However, resources are hardly made available by State/Central Govt. for organising activities related to IEC, monitoring quality of iodised salt, conducting goitre survey and celebration of Global IDD Day etc.

Urban Areas

Programme was weak in urban areas. ANMs were educatingto pregnant women during home visits. Majority of population (70%) in urban areas in most of the States were using iodised salt.

Rural Areas

Some States like Gujarat & Assam informed the regular conduction of IEC and salt testing activities in PHC areas. Health education was being provided to the community during home visits by the health workers. Recording and reporting of salt testing was in practice but, due to non-supply of testing kits, this activity has been currently stopped in almost all States.

NGO Level

NGOs involvement in NIDDCP activities was limited. However, a few NGOs in the State of Assam and Rajasthan have been involved in awareness generation activities.

Wholesaler Level

Wholesaler/salt traders in the selected States were not aware of the standards of packing, storage and ppm content at production and consumption level.

Duplicate branded packet salts were also reported in States like Gujarat, Sikkim, Assam, Rajasthan, U.P., Orissa etc. More than 70% salt samples collected from wholesalers in selected States has iodine content more than 15ppm level.

Retailer Level

Most of retailers (80%) in selected States did not know the ill effects of iodine deficiency such as goitre, abortion, mental retardation etc. Almost all the retailers in selected States reported that neither the Govt. Official nor Food Inspector had visited for salt sample collection and testing. About 72 percent of salt samples collected from retailers in selected States has iodine content more than 15ppm level.

Food & Civil Supply Department Level

Department of Food and Civil Supply in Gujarat, Sikkim, Rajasthan and Tamil Nadu was providing iodised salt to poor/BPL/tribal population at a highly subsidised rate of Rs. 1-3 per kg. through Public Distribution System.

Salt Testing Laboratory

The Salt Testing Laboratories were set up by Salt Commissioner Office at Nawa city, Nagaur district in Rajasthan and other at Bharuch in Surat district, Gujarat are engaged in testing iodine content of salt produced by manufacturers but the officials were not empowered to take any legal action against producers

(B) Community Level Finding

Socio-Demographic Characteristics

A total sample of 2404 HHs was covered in the study from urban and rural areas. This consisted of 1528 rural HHs (63.56%) and 876 urban HHs (36.44%) from 10 selected States of the country. The Schedule Cast population consisted of 16%, Schedule Tribe 8% and rest 76% were belonging to General and Other categories. A total of 84% were Hindus, 9% were Muslims and rests 7% were Christians and Others. As literacy is concerned, 21% were illiterate, 28% were having elementary schooling, 33% were high school pass and 18% were graduates. Regarding occupation, nearly 25% were labourer, 22% were cultivators, 25% were from service background and rest 18% were unemployed (Table 2A & 2B.).

Knowledge, Attitude, Consumption and Availability of Iodised Salt

It was found from the analysis that about 72% respondents were aware about the iodised salt. The highest percentage was 89% in Himachal Pradesh and lowest percentage was 49% in Uttar Pradesh. Though awareness about iodised salt was high but knowledge about iodised salt was low. Only 26% of respondents were knowing about meaning of iodised salt. The highest percentage was in Rajasthan 52% and lowest was in Tamil Nadu 8%. States of Assam (36%), Kerala (40%), Rajasthan. (52%) and Sikkim (26%) were relatively better than Gujarat (21%), H.P. (30%), Orissa (12%), Punjab (22%), T.N. (8%) and U.P. (9%). The logo of 'Smiling Sun' was known to only 4% of respondents and printing of iodine level on salt packet was known to only 15% of respondents (Table 3 A & 3B). Across States similar percentage of responses were noticed except Orissa, Rajasthan and UP where it was relatively low. Regarding availability of iodised salt, 93% respondents told that it was always available without much variations across States. Most of the HHs were consuming salt between 1-3 kg per month. Majority of HHs were spending upto Rs. 10/- per month. In tribal areas of Orissa, it was found that crystal/crushed salt (non-iodised) in 20 kg bag was given to labourers in lieu of wages. Also, barter system was in vogue in remote tribal areas in the State of Orissa. The non-iodized salt used to be exchanged in

selling sub standard salt. Usually, Salt Department informs the District Collector by telegram about dispatch of inadequately iodised salt but feedback on action taken is never received.

Salt Producers

Producers in the State of Rajasthan, Gujarat and Assam were aware of ban status about the sale of non-iodised salt in their State. Standard packaging material i.e. High Density Polyethylene (HDPE) is being used for packing bulk quantity of iodated salt. The cost of Potassium iodate required for iodisation was reported expensive by all the producers interviewed.

lieu of local forest fruits/other products. Nearly 81% of respondents told that they purchased salt from local shop in same village/town. Rest 9% were buying from shops in nearby town and 2% were buying salt from weekly market. It was observed in different States that in weekly market most of the venders were selling non-iodised/duplicate brand salt without any objection from community leaders or officials from health department or PFA Cell. It was found that 64% of HHs were using refined iodised salt, 17% were using crystal salt and 10% were using crushed salt.

It was observed that non-iodized crystal salt was mostly being used in producing Sates like Rajasthan, Tamil Nadu, Gujarat and Kerala. However, in State of UP crystal salt was mainly used in rural areas. Reason for use of non-iodized crystal/crushed salt was mostly cheaper price and easy availability through hawkers. These hawkers were selling crystal salt in exchange of waste items. Majority of users of non-iodised crystal/crushed salt were using it for cooking purpose but some were found to be using it for animal's consumption, coconut plants, burial of dead bodies, ice preparation, brick kiln etc. Majority of HHs (81%) were purchasing salt in packets of 1kg or 1/2 kg. Relatively less percentage of HHs viz 46% HHs in UP, 61% in Orissa and 69% in Tamil Nadu were purchasing packaged salt. Rest was using loose salt usually non-iodised one. Though the majority of respondents (75%) had no problem with affordability of price, 25% said that price should be between Rs.1 to 3 per kg. Only 87% of respondents were keeping salt in closed jar and 6% were keeping in same packet. Rest 7% were keeping it open. This percentage of HHs keeping salt in closed jar was more than 80% in all States except in Rajasthan (73%). Only 10% of respondents were aware about ban on sale of non-iodised salt. This varies from 21% in Himachal Pradesh to 1.3% in Kerala. States of Rajasthan (14.3%), Assam (15%) were better placed than other States. Only 2.4% of respondents were aware about MBI Kits to check the iodine content in salt. The better aware States were Sikkim (11%), Assam (5.4%), Gujarat (2.9%) and HP (2.5%). This percentage was below 1 in rest of the six States.

In the community survey, HHs were asked about ill effects of consuming non-iodised salt. All possible

health problems were probed. In aggregate terms goiter was known to about 97% of respondents. Other health problems were poorly known i.e. cretinism (3.4%), mental retardation (17.1%), abortion (5.1), still birth (2.6%), deaf mutism (1.8%), dwarfism (2.3%), squint (1.4%), neuro-motor defects (1.8%), others (2.0).

However, we came across with perception of people that for those using plenty of seafood, iodised salt is not necessary and by consuming iodised salt serious health problems like diabetes, heart attack etc. would occur because of excess iodine in body. When asked about source of information regarding iodised salt, T.V. was found as major source (88.6%) followed by Radio (20%), Streets play/Newspaper and Magazine (8.3%), Doctor/Health Worker/ICDS worker (10.0%), Shopkeeper (2.3%), Poster (1.3%) (Fig.1). The pattern is almost same across States. Thus, it can be inferred that TV & Radio are major source of information on iodised salt.

Activities Conducted under the NIDDCP

When HHs visited were asked whether anybody visited to check salt sample in their houses during last one year, in aggregate terms only 4% respondents said 'yes'. The figure was highest among Rajasthan (13%) followed by Gujarat (12%), Tamil Nadu (6%), Orissa (4%) and Sikkim (3%). In rest of the States, it was less than 1%. Regarding conduct of Goitre/IDD Survey, 98.4% respondents said nobody visited their house but about 2% respondents in Gujarat and Rajasthan said 'yes'. Regarding any IEC activities conducted during last one-year, 96% respondents said 'no' but only in States of Gujarat (8.3%), Orissa (6.6%) and Rajasthan (9%) respondents said 'yes'. In aggregate, less than 2% respondents were aware about any related activity conducted by Panchayat/ School but in few States viz Gujarat (6.2%), Rajasthan (4.5%) and Tamil Nadu (5%) respondents were aware about some activities conducted by Panchayat/School.

During the household survey salt samples were also tested. Nil iodine was found in 17.3% samples followed by 7ppm in 8.7% households, 15ppm in 18.2% households. 30ppm in 54% households and >30ppm in 2% households. Therefore, it can be concluded that still more than 1/4th households consuming salt having nil/inadequate iodine level. The State wise distribution describes that in State of Assam 21%, Gujarat 39%, Himachal Pradesh 0.4%, Kerala 6.3%, Orissa 44%, Punjab 22%, Rajasthan 35%, Sikkim 6%, Tamil Nadu 42.5% and in Uttar Pradesh 45% households were using inadequately iodised salt. Subsequently, households were asked about measures to promote consumption of iodised salt. Half of the respondents replied for awareness creation. About one fourth opined to ban non-iodised salt in market. About 7% favored punishing vendors. For improving availability of salt, distribution of subsidized salt

(34%) and regulation of salt price (20%) were main suggestions from people.

Differentials in Awareness and Consumption of Iodised Salt

Regarding accessibility of salt, highest percentage of ST population (15%) buy salt from another village while majority of other caste including SC buy salt from the same village where they live. Relatively higher percentage of SC (2.3%) and ST (11.5%) population buy salt from weekly market. As already described weekly markets are major source of supply of non-iodised salt. Again, the use of iodised refined salt is relatively less among SC (47%) and ST (51.4%) population as compared to OBC (53%) and General Population (73%). Awareness about iodised salt was low among SC (60%) and ST (65%) population as compared to OBCs (72%) and General (78%) population. The knowledge about ill effects of iodine deficiency was also poor among SC (41%) and ST population (46%) as compared to OBCs (55%) and General population (60%). The consumption of non-iodised salt was relatively higher between SC (23%) and

ST (26%) population as compared to OBCs (11.8%) and General (11.8%) population. Higher percentage of SC (33%) and ST (29%) population were buying loose salt as compared to OBCs (16%) and General (13%) population. Thus, it can be safely concluded that all parameters under study were more in favour of General and OBC population than SC/ST population.

The urban/rural differential also found to be affecting different parameters under study. More urban HHs (76%) were aware about iodised salt as compared to rural HHs (69%). Awareness about logo of smiling sun was half in rural areas (2.5%) as compared to urban areas (5.6%). Knowledge about ban on non-iodised salt was low in rural areas (9.0%) as compared to urban areas (11%). The knowledge about ill effects of iodised salt was less (54%) in rural areas as compared to urban areas (61%). Availability of iodised salt in rural areas was relatively low (90%) as compared to urban areas (96%). Percent of HHs using non-iodised salt is more (21%) in rural areas as compared to (12%) in urban areas. More HHs in rural areas (25%) purchase loose salt as compared to 8.8%) HHs in urban areas. Thus, it can be safely concluded that all parameters under study were more in favour of urban areas than in rural areas.

It was also found that parameters under study were different in endemic as well as non-endemic areas. Non-iodised salt is used in 36.8% HHs in endemic districts as compared to 21.8% HHs in non-endemic districts. Significantly low HHs (67%) in endemic districts were aware about iodised salt as compared to

78% HHs in non-endemic districts. Knowledge about ban on non-iodised salt was low 7% in endemic districts as compared to non-endemic districts (13%). Again, knowledge about ill effects of iodine deficiency was low in endemic districts (53%) as compared to non-endemic districts (61%). More HHs in endemic districts (20%) were using non-iodised salt as compared to HHs in non-endemic districts (15%). Loose salt is purchased more in endemic areas (24%) as compared to non-endemic areas (13%).

Monthly Expenditure on Consumption of Salt

More than 52 percent of the household spends less than Rs.10/- for the consumption of iodised salt comparatively higher expenditure on non-iodised crystal salt in states like UP, Orissa and Tamil Nadu etc indicates consumption pattern of non-iodised salt in such states.

DISCUSSION

The use of iodized salt varies dramatically from one state to another. The variations are due to a number of factors, including the scale of salt production, transportation requirements, enforcement efforts, differences in state regulations, the pricing structure, and storage patterns. The use of adequately iodized salt is uniformly high (72 percent or higher) throughout the Northeast Region, in most states in the North Region, and in Kerala, reaching a high of 94 percent in Manipur. The use of adequately iodized salt is lowest (less than 40 percent) in Andhra Pradesh, Madhya Pradesh, Uttar Pradesh, and Orissa. Despite the fact that the overall use of adequately iodized salt has not changed since National Family Health Survey-2 [11], several states have made substantial improvements over time but the situation has deteriorated in other states. The largest gains have been made in Kerala (from 39 percent in NFHS-2 to 74 percent in NFHS-3), Goa (from 42 percent to 65 percent), Jammu and Kashmir (from 53 percent to 76 percent), Tamil Nadu (from 21 percent to 41 percent), Meghalaya (from 63 percent to 82 percent), and Nagaland (from 67 percent to 83 percent). The states in which the use of adequately iodized salt has deteriorated substantially are Haryana (from 71 percent to 55 percent), Himachal Pradesh (from 91 percent to 83 percent), and Assam (from 80 percent to 72 percent). As per the findings of the study, in Assam the use of iodised salt has been reported 79.6 per cent, in Gujrat 58.9 per cent, in Himachal Pradesh 95.8 per cent, in Kerala 85.4 per cent, in Orissa 54.4 per cent, in Punjab 82.9 per cent, in Rajasthan 44.4 per cent, in Sikkim 88.1 per cent, in Tamil Nadu 66.4 per cent, in UP 38.8 per cent and in the country as a whole it is 63.5 per cent. These findings are similar with the results of NFHS III. Besides, in the present study 95.1 per cent of the households reported that they got their salt tested by AWW, ANM, Food Inspector etc. Among the religious

groups, as per NFHS III the use of adequately iodised salt was highest among Jains (84 per cent), followed by Sikhs (74 per cent), and Christians (63 per cent). Again as per NFHS III, the use iodised salt among Schedule Caste is 44.8 per cent, among Schedule Tribe 36.7 per cent, among Other Backward Class 45.7 per cent and among General 65.3 per cent. The findings of the study are similar with NFHS III and the study revealed that the use of iodised refined salt is relatively less among SC (47%) and ST (51.4%) population as compared to OBC (53%) and General Population (73%). Higher percentage of SC (33%) and ST (29%) population were buying loose salt as compared to OBCs (16%) and General (13%) population.

CONCLUSION

Study found that the programme was able to achieve its objectives up to a remarkable extent. There was awareness among population about use of iodised salt. However regarding testing of salt by government functionaries such as ANM, AWW etc. was reported very less. For IEC, more emphasis should be given on celebrating Global IDD day in rural areas especially in schools and Panchayats. TV and Radio should be used for IEC rather than other methods in view of the cost effectiveness and better reach of messages. IEC messages should also include information about all types of IDD, proper storage and cooking practices of salts etc. Under NRHM focus should be given for publicity in local languages about IDD and consumption of iodised salt.

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Table 1: Target and Production of Iodised Salt

Year	Target	Production (Lakh tons)
1999-2000	50.00	46.16
2000-2001	50.00	45.35
2001-2002	50.00	47.92
2002-2003	52.00	36.89
2003-2004	52.00	42.53
2004-2005	52.00	46.10
2005-2006	52.00	49.83

Source: MOCI, Salt Deptt. 2004-05

Table 2A: State-wise Distribution of Socio-Demographic Characteristics of Respondents (in Percent)

STUDY PARAMETERS		Assam (N=240)	Gujarat (N=241)	Himachal Pradesh (N=239)	Kerala (N=240)	Orissa (N=241)
CASTE	SC	16.7	9.5	5.0	12.5	14.9
	ST	4.6	31.5	.0	.0	24.1
	OBC	30.0	14.5	37.2	44.6	18.3
	General	48.3	38.2	57.7	38.3	42.7
	Na	.0	6.2	.0	4.6	.0
	No Response	.4	.0	.0	.0	.0
RELIGION	Hindu	74.6	83.0	93.3	57.1	100.0
	Muslim	25.4	14.1	5.4	19.6	.0
	Sikh	.0	.0	1.3	.4	.0
	Jain	.0	.0	.0	.0	.0
	Christian	.0	2.9	.0	22.9	.0
	Budhist	.0	.0	.0	.0	.0
EDUCATION OF RESPONDENT	Illiterate	21.7	32.4	6.3	.8	32.8
	Elementary	26.7	34.9	15.5	38.8	24.1
	High School	29.6	26.1	41.0	38.8	28.6
	College/ Professional	20.8	5.8	36.8	21.3	14.5
	No Response	1.3	.8	.4	.4	.0
OCCUPATION OF HEAD OF HOUSEHOLD	Labour	35.0	33.2	13.8	39.6	29.5
	Service	21.3	21.2	37.7	17.9	20.7
	Cultivation	15.8	19.9	18.4	.8	22.8
	Business	22.5	24.1	25.1	14.6	18.3
	Unemployed	.8	.4	.0	3.8	.4
	Others	3.8	1.2	5.0	23.3	8.3
	No Response	.8	.0	.0	.0	.0

Table 2B: State-wise Distribution of Socio-Demographic Characteristics of Respondents (in Percent)

	STUDY PARAMETERS	Punjab (N=240)	Rajasthan (N=241)	Sikkim (N=244)	Tamil Nadu (N=238)	U P (N=237)	Total (N=2404)
CASTE	SC	15.0	19.3	9.8	35.7	21.1	15.9
	ST	2.1	6.1	15.6	.8	1.3	8.7
	OBC	25.8	37.3	39.3	47.1	27.8	32.2
	General	56.3	32.8	34.4	16.4	43.5	40.8
	Na	.8	2.9	.8	.0	2.1	1.7
	No Response	.0	1.6	.0	.0	4.2	0.6
RELIGION	Hindu	72.9	96.3	84.8	91.2	86.5	84.0
	Muslim	1.3	3.3	1.6	5.0	13.5	8.9
	Sikh	25.4	.0	.0	.0	.0	2.7
	Jain	.0	.4	.0	.0	.0	0.0
	Christian	.4	.0	2.0	3.8	.0	3.2
	Budhist	.0	.0	11.5	.0	.0	1.2
EDUCATION OF RESPONDENT	Illiterate	26.7	17.6	12.3	20.6	34.6	20.5
	Elementary School	25.0	42.6	29.1	21.0	21.5	28.0
	High School	34.2	22.5	36.5	42.9	30.4	33.0
	College/ Professional	14.2	16.8	21.3	15.5	9.7	17.7
	No Response	.0	.4	.8	.0	3.8	0.8
OCCUPATION OF HEAD OF HOUSEHOLD	Labour	20.4	13.5	5.7	38.2	24.1	25.2
	Service	24.2	24.2	47.1	13.0	22.4	25.0
	Cultivation	31.3	43.4	12.3	23.5	33.3	22.2
	Business	14.2	15.6	32.8	10.5	13.1	19.1
	Unemployed	.4	.4	.4	.4	.8	0.8
	Others	8.8	2.0	1.6	13.0	5.5	7.2
	No Response	.8	.8	.0	1.3	.8	0.5

Table 3A: State-wise Distribution of Knowledge about use of Iodised Salt

		Assam	Gujarat	H.P.	Kerala	Orissa
HEARD ABOUT IODISED SALT	Heard about Iodised salt	82.5	61.8	88.7	79.6	63.5
WHAT IS IODISED SALT	Ordinary common salt with a small quantity of iodine	35.8	21.2	29.7	40.4	12.4
	Other specify	1.3	1.2	0.4	1.3	0.4
	Don't know	62.9	77.6	69.9	58.3	87.1
RECOGNIZATION OF IODIZED SALT PACKET	Smiling sun on packet	2.1	2.9	7.1	2.9	2.5
	Iodine level printed on packet	26.7	20.7	23.0	29.2	0.4
	Green leaves	0.0	0	0.4	0	0.4
	Any other	0	1.7	1.3	1.3	1.7
	Don't know/n.r	71.3	74.7	68.2	66.7	95.0
AVAILABILITY OF IODIZED SALT IN YOUR AREA	Always available	96.7	98.3	97.1	98.3	94.2
	Never available	2.9	.4	1.3	.4	3.3
	Not available within last 6 months	0	0	.4	0.4	0.4
	No response	.4	1.2	1.3	.8	2.1
WHERE DO YOU USUALLY BUY SALT	Local shop in the same town/village	98.3	78.4	93.7	91.3	70.1
	Another shop in nearby town/village	.8	7.9	3.3	8.3	10.4
	From the wholesale shop in district in HQ	.4	.4	1.3	0	0
	From weekly market	.4	0	.4	0	18.7
	Others	0	13.3	1.3	.4	.8

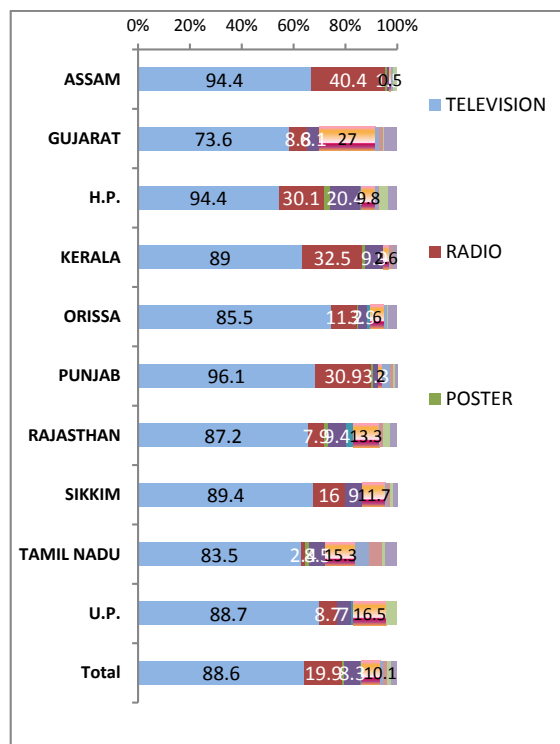

Fig. 1: Source of Information about Iodised Salt

Table 3B: State-wise Distribution of Knowledge about use of Iodised Salt

		Punjab	Rajasthan	Sikkim	Tamil Nadu	U.P.	Total
HEARD ABOUT IODISED SALT	Heard about Iodised salt	64.2	83.6	77.0	68.9	48.5	71.9
WHAT IS IODISED SALT	Ordinary common salt with a small quantity of iodine	22.1	51.6	25.8	7.6	9.3	25.7
	Other specify	9.2	1.6	0.8	7.6	.8	2.5
	Don't know/n.r	68.8	46.7	73.4	84.9	89.9	71.9
RECOGNITION OF IODIZED SALT PACKET	Smiling sun on packet	11.3	0.4	3.3	2.9	.8	3.6
	Iodine level printed on packet	15.0	.0	13.9	13.9	2.1	14.5
	Green leaves	0	0	0	0.4	0.4	0.2
	Any other	.4	0	.4	5.5	1.3	1.3
	Don't know/n.r	73.3	99.6	82.4	77.3	95.4	80.4
AVAILABILITY OF IODIZED SALT IN YOUR AREA	Always available	97.9	90.2	97.5	73.5	81.4	92.6
	Never available	1.7	1.2	.8	7.6	4.6	2.4
	Not available within last 6 months	0	0	0	1.7	0	0.6
	No response	.4	8.6	1.6	17.2	13.9	4.7
WHERE DO YOU USUALLY BUY SALT	Local shop in the same town/village	77.5	74.2	82.8	60.1	86.5	81.3
	Another shop in nearby town/village	21.7	8.6	15.2	5.0	11.8	9.3
	From the wholesale shop in district in HQ	0	7.8	0	1.7	.8	1.2
	From weekly market	0	1.2	0	.4	0	2.1
	Others	.8	8.2	2.0	32.8	0.8	6.0

Table 4: Monthly Expenditure on Consumption of Salt by the Family

		Assam	Gujarat	H.P.	Kerala	Orissa	Punjab	Rajas- than	Sikkim	Tamil Nadu	U.P.	Total
MONEY SPENT ON IODIZED SALT PER MONTH	0 – 10	49.2	73.0	54.4	87.9	25.3	60.8	55.7	60.7	29.0	25.7	52.2
	10 –20	36.3	7.5	38.5	6.7	28.6	25.0	12.3	29.1	9.2	12.7	20.6
	20 – 30	7.9	1.2	5.4	0.4	7.1	4.2	3.3	4.9	2.9	2.5	4.0
	30 – 40	3.3	0.4	0.4	0.0	2.5	0.8	0.8	0.8	0.4	0.8	1.0
	40 - 50	0.0	0.4	0.8	0.0	0.4	0.0	0.0	0.4	0.0	0.4	0.2
	>50	0.4	0.0	0.4	0.0	0.4	0.0	0.0	0.4	0.0	0.0	0.2
	N.R./ N.A.	2.9	17.4	0.0	5.0	35.7	9.2	27.9	3.7	58.4	57.8	21.7
MONEY SPENT ON CRYSTAL SALT PER MONTH	0 – 10	2.5	19.1	0.8	15.8	43.2	57.1	15.6	.0	55.0	58.6	26.7
	10 -20	0.0	0.0	0.0	0.0	12.0	1.3	1.2	4.1	10.1	1.3	3.0
	20 - 30	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.0	1.7	0.0	0.2
	30 - 50	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.8	0.4	0.4	0.3
	N.R./ N.A.	97.5	80.9	99.2	84.2	42.7	41.3	83.2	94.3	32.4	39.7	69.6